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Genetic Variation in Inducibility of Resistance in Tomatoes Against *Phytophthora infestans*

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Abstract

Resistance induction is a commonly observed phenomenon in many plants and usually occurs in reaction to exposure to avirulent pathogens or certain chemicals (e.g. BABA). Induction can be achieved via the leaves and there is evidence that some plant strengthening products can induce resistance via the root. Currently we are working on the possibility to use induced resistance in tomato against *Phytophthora infestans*, causal agent of late blight by selecting more inducible varieties and the compounds that can be best used to induce resistance in practice with an emphasis on products that are easy to be applied preferably via the soil.

For this purpose, a total of 32 tomato varieties with various levels of susceptibility to late blight were screened by using detached leaf assays to determine if and what type of variation exists for inducibility of resistance. One month old plants were sprayed with BABA (DL3-amino butyric acid) seven days before challenge inoculation by spraying until near run off, whereas control plants were sprayed with distilled water in a similar way. Leaves directly treated with BABA (old) and newly grown leaves (young) were included in the test. Resistance induction was usually higher on leaves newly grown after treatment than on old leaves that had been directly treated by BABA. The degree of induction varied among varieties based on the absolute (measured in cm² diseased leaf area) and relative disease reduction achieved through the use of BABA with several varieties showing no induction at all and others more than 90% disease reduction.

Based on the initial screening, 8 varieties were selected for further investigation. We have examined the effect of quality (Bio-Feed Product), an aqueous extract of herb via soil application along with BABA as a reference inducer. Three applications of 50 ml solution of quality at 4% concentration had shown a significant effect on the level of infestation by *P. infestans* with up to 40% protection in some varieties indicating that there is indeed potential for improving field resistance by plant strengtheners.

Keywords: BABA, genetic variation, late blight, plant strengtheners, resistance induction